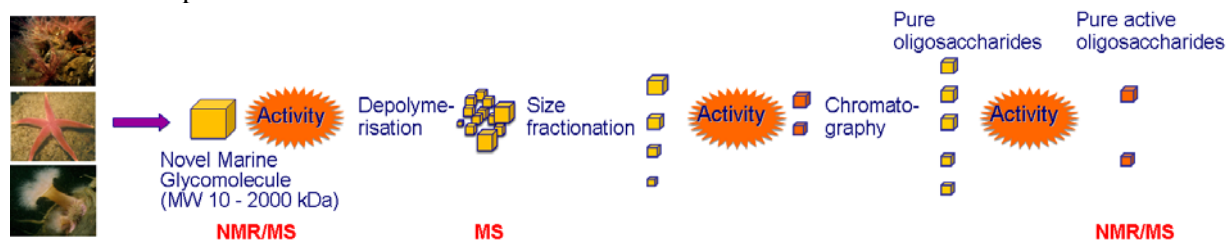


3.5 year Postgraduate Research Studentship starting before April 2009 (£ 12,940/annum)
School of Chemistry, University of Edinburgh

Structural characterisation of marine glycosaminoglycans and their interactions with proteins.

A PhD studentship in chemistry is available through The Scottish Funding Council's SPIRIT scheme. The funding is for British/EU nationals only. This scheme is designed to foster close ties between Scotland's chemistry research community and its chemical industry. The project is for duration of 42 months and will be carried out at The University of Edinburgh in conjunction with GlycoMar (<http://www.glycomar.com/>). Glycomar, an Oban based marine biotechnology company generates pure glycomolecules isolated from marine organisms. The Company has a need to structurally characterise molecules that are selected for clinical development.



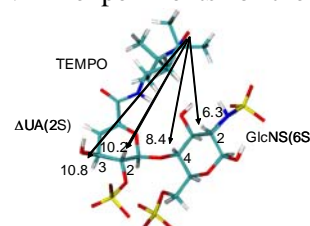
As the major part of this project, GlycoMar's on-site structural characterization by chemical methods will be complemented by biophysical methods, such as Nuclear Magnetic Resonance and Mass Spectrometry. University of Edinburgh has excellent facilities in both NMR and MS.



<http://www.bionmr.chem.ed.ac.uk/bionmr/index.html> <http://www.chem.ed.ac.uk/business/massspec.html>

Driven by the biological activity of the compounds, novel potential therapeutics will thus have their structures determined. This part of the project will include customizing NMR experiments for the structure determination of polysaccharides in complex mixtures.

Selected molecules will be studied in their free forms and in complexes with proteins. Here we will use of paramagnetically tagged glycomolecules provided by Dr. Alison Hulme (Edinburgh). These studies will be important for future bio-mimetic design.



Heparin disaccharide tagged by a paramagnetic molecule

Relevant publications:

1. Herbert, A.P., Deakin, J. A., Schmidt, C., Blaum, B., Egan, C., Pangburn, M. K., Lyon, M., Uhrín, D., Barlow, P. N. Structure shows that a glycosaminoglycan and protein recognition site in factor H is perturbed by age-related macular degeneration-linked single nucleotide polymorphism. *J. Biol. Chem.* 282, 18960 - 18968 (2007).
2. Gemma, E., Hulme, A. N., Jahnke, A., Jin, L., Müller, R. M., Uhrín, D. DMT-MM Mediated Functionalisation of the Non-Reducing End of Glycosaminoglycans, *Chem. Commun.* 2007, 2686 – 2688.
3. Uhrín, D. and Brisson, J.-R., Structure Determination of Microbial Polysaccharides by High Resolution NMR Spectroscopy. *NMR in Microbiology: Theory and Application*. Eds. Barbotin, J.-N. and Portais, J.-C. Horizon Scientific Press, pp. 165-190 (2000).

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